

Appendix C – Reasonable and Prudent Measures, Terms and Conditions, and Conservation Recommendations Applicable to Species in Oregon for Which NMFS Found Jeopardy or Adverse Modification in its Biological Opinions for Pesticides.

1. BiOp No. 1 Insecticides: chlorpyrifos, diazinon, and malathion.
2. BiOp No. 2 Insecticides: carbaryl, carbofuran, and methomyl.
3. BiOp No. 3 Insecticides: methidathion, naled, phorate, and phosmet.
4. BiOp No. 4 Herbicides: 2,4-D and diuron, and the Fungicide: chlorothalonil.
5. BiOp No. 5 Herbicides: oryzalin, pendimethalin, and trifluralin.

fishes killed do not have to be listed salmonids. Salmonids appear to be more sensitive to these compounds, so that if there are kills of other freshwater fishes that can be attributed to use of these pesticides, it is likely that salmonids have also died, even if no dead salmonids can be located. In addition, if stream conditions due to pesticide use kill less sensitive fishes in certain areas, the potential for lethal and non-lethal takes downstream areas increases. A fish kill is considered attributable to one of these three ingredients, its metabolites, or degradates, if measured concentrations in surface waters are at levels expected to kill fish, if AChE measurements were taken of the fish carcass and correlate to fish death, if pesticides were applied in the general area, and if pesticide drift or runoff was witnessed or apparent.

NMFS notes that with increased monitoring and study of the impact of these pesticides on water quality, particularly water quality in off-channel habitats, NMFS will be able to refine this incidental take statement, and future incidental take statements, to allow other measures of the extent of take.

Reasonable and Prudent Measures ^L

The measures described below are non-discretionary, and must be undertaken by the EPA so that they become binding conditions of any grant or permit issued to the applicant(s), as appropriate, for the exemption in section 7(o)(2) to apply. The EPA has a continuing duty to regulate the activity covered by this incidental take statement. If the EPA (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant(s) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the EPA must report the progress of the action and its impact on the species to NMFS OPR as specified in the incidental take statement. [50 CFR§402.14(i)(3)].

To satisfy its obligations pursuant to section 7(a) (2) of the ESA, the EPA must monitor (a) the direct, indirect, and cumulative impacts of its long-term registration of pesticide products containing chlorpyrifos, diazinon, and malathion; (b) evaluate the direct, indirect, or cumulative impacts of pesticide misapplications in the aquatic habitats in which they occur; and (c) the consequences of those effects on listed Pacific salmonids under NMFS's jurisdiction. The purpose of the monitoring program is for the EPA to use the results of the monitoring data and modify the registration process in order to reduce exposure and minimize the effect of exposure where pesticides will occur in salmonid habitat.

The EPA shall:

1. Minimize the amount and extent of incidental take from use of pesticide products containing chlorpyrifos, diazinon, and malathion by reducing the risk of chemicals reaching the water.
2. Monitor any incidental take or surrogate measure of take that occurs from the action.
3. Report annually to NMFS OPR on the monitoring results from the previous season.

Terms and Conditions ^L

To be exempt from the prohibitions of section 9 of the ESA, the EPA must comply with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are non-discretionary.

1. EPA shall develop and implement a NMFS-approved effectiveness monitoring plan for off-channel habitats with annual reports. The plan shall identify representative off-channel habitats within areas prone to drift and runoff of pesticides. The number and locations of off-channel habitat sampling sites shall include currently- used off-channel habitats by threatened and endangered Pacific salmonids identified by NMFS biologists and will include at least two sites for each general species (ESU, DPS) i.e., coho salmon, chum salmon, steelhead, sockeye salmon, and ocean-type Chinook and stream-type Chinook salmon. Additionally, each state shall have at least three sites within their borders. One site in each state shall target where juvenile ESA-listed salmonids migrate to the Pacific Ocean. The plan shall collect daily surface water samples for seven consecutive days for at least three seven-day periods during the application season. Collected water samples will be analyzed for current-use OPs and carbamates following USGS schedules for analytical chemistry. The report shall be submitted to NMFS OPR and will summarize annual monitoring data and provide all raw data.
2. For Ozette Lake Sockeye, require the following no-application buffers/setbacks on labels for all malathion, diazinon and chlorpyrifos containing products: Where ground applications are permitted. Do not apply pesticide products within 500 ft (152.4 m) of Ozette Lake sockeye salmon habitat. Where aerial applications are permitted. Do not apply pesticide products within 1,000 ft (304.8 m) of Ozette Lake sockeye salmon habitat.

3. EPA shall include the following instructions requiring reporting of fish kills either on the labels for all products containing malathion, diazinon or chlorpyrifos, or in ESPP Bulletins:

NOTICE: If landowners and applicators find that salmon appear injured or killed as a result of pesticide exposure or other project-related activities, the finder should leave the fish alone, make note of any circumstances likely causing the death or injury, location and number of fish involved, and take photographs, if possible. Adult fish should generally not be disturbed unless circumstances arise where an adult fish is obviously injured or killed by pesticide exposure, or some unnatural cause. The finder must contact NMFS Office of Protected Resources at 301-713-1401. The finder may be asked to carry out instructions provided by Protected Resources to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.

4. EPA shall report to NMFS any incidences from its incident database that it has classified as probable or highly probable.

Conservation Recommendations ^L

Section 7(a) (1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The following conservation recommendations would provide information for future consultations involving future authorizations of pesticide active ingredients that may affect listed species:

1. Conduct mixture toxicity analysis in screening-level and endangered species biological evaluations;
2. Develop models to estimate pesticide concentrations in off-channel habitats;
3. Develop models to estimate pesticide concentrations in aquatic habitats associated with non-agricultural applications, particularly in residential and industrial environments.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the EPA should notify NMFS of any conservation recommendations it implements in the final action.

levels expected to kill fish, if AChE measurements were taken of the fish carcass and correlate to fish death, if pesticides were applied in the general area, and if pesticide drift or runoff was witnessed or apparent.

NMFS notes that with increased monitoring and study of the impact of these pesticides on water quality, particularly water quality in off-channel habitats, NMFS will be able to refine this incidental take statement, and future incidental take statements, to allow other measures of the extent of take.

Reasonable and Prudent Measures ^L

The measures described below are non-discretionary, and must be undertaken by the EPA so that they become binding conditions of any grant or permit issued to the applicant(s), as appropriate, for the exemption in section 7(o)(2) to apply. The EPA has a continuing duty to regulate the activity covered by this incidental take statement. If the EPA (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant(s) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the EPA must report the progress of the action and its impact on the species to NMFS OPR as specified in the incidental take statement. [50 CFR§402.14(i)(3)].

To satisfy its obligations pursuant to section 7(a)(2) of the ESA, the EPA must monitor (a) the direct, indirect, and cumulative impacts of its long-term registration of pesticide products containing carbaryl, carbofuran, and methomyl; (b) evaluate the direct, indirect, or cumulative impacts of pesticide misapplications in the aquatic habitats in which they occur; and (c) the consequences of those effects on listed Pacific salmonids under NMFS' jurisdiction. The purpose of the monitoring program is for the EPA to use the results of the monitoring data and modify the registration process in order to reduce exposure and minimize the effect of exposure where pesticides will occur in salmonid habitat.

The EPA shall:

1. Minimize the amount and extent of incidental take from use of pesticide products containing carbaryl, carbofuran, and methomyl by reducing the potential of chemicals reaching the water;
2. Monitor any incidental take or surrogate measure of take that occurs from the action; and
3. Report annually to NMFS OPR on the monitoring results from the previous season.

Terms and Conditions^L

To be exempt from the prohibitions of section 9 of the ESA, within one year following the date of issuance of this Opinion, the EPA must comply with the following terms and conditions.

These terms and conditions implement the reasonable and prudent measure described above.

These terms and conditions are non-discretionary.

1. a. EPA shall include the following instructions requiring reporting of fish kills either on the labels for all products containing carbaryl, carbofuran, and methomyl or in ESPP Bulletins:

NOTICE: Incidents where salmon appear injured or killed as a result of pesticide applications shall be reported to NMFS OPR at 301-713-1401 and EPA at 703-305-7695. The finder should leave the fish alone, make note of any circumstances likely causing the death or injury, location and number of fish involved, and take photographs, if possible. Adult fish should generally not be disturbed unless circumstances arise where an adult fish is obviously injured or killed by pesticide exposure, or some unnatural cause. The finder may be asked to carry out instructions provided by NMFS OPR to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.

b. EPA shall report to NMFS OPR any incidences regarding carbaryl, carbofuran, or methomyl effects on aquatic ecosystems added to its incident database that it has classified as probable or highly probable.

c. Do not apply pesticide products when wind speeds are greater than or equal to 10 mph as measured using an anemometer immediately prior to application. When applying pesticide products, commence applications on the side nearest the aquatic habitat and proceed away from the aquatic habitat.

2. For all uses do not apply pesticide products when soil moisture is at field capacity, or when a storm event likely to produce runoff from the treated area is forecasted by NOAA/NWS (National Weather Service), to occur within 48 h following application.

Conservation Recommendations ^L

Section 7(a) (1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The following conservation recommendations would provide information for future consultations involving future authorizations of pesticide a.i.s that may affect listed species:

1. Conduct mixture toxicity analysis in screening-level and endangered species biological evaluations;
2. Develop models to estimate pesticide concentrations in off-channel habitats; and
3. Develop models to estimate pesticide concentrations in aquatic habitats associated with non-agricultural applications, particularly in residential and industrial environments.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the EPA should notify NMFS OPR of any conservation recommendations it implements in the final action.

Reinitiation Notice ^L

This concludes formal consultation on the EPA's proposed registration of pesticide products containing carbaryl, carbofuran, and methomyl and their formulations to ESA-listed Pacific salmonids under the jurisdiction of the NMFS. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the extent of take specified in the *Incidental Take Statement* is exceeded; (2) new information reveals effects of this action that may affect listed species or designated critical habitat in a manner or to an extent not previously considered in this biological opinion; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the identified action. If reinitiation of consultation appears warranted due to one or more of the above circumstances, EPA must contact NMFS OPR. If none of these reinitiation triggers are

located. In addition, if stream conditions due to pesticide use kill less sensitive fishes in certain areas, the potential for lethal and non-lethal takes in downstream areas increases. A fish kill is considered attributable to one of these 12 ingredients, its metabolites, or degradates, if the a.i is known to have been applied in the vicinity and may reasonably be supposed to have run off or drifted into the affected area, and if surface water samples, AChE measurement, or pathology indicate lethal levels of the a.i.(s).

NMFS notes that with increased monitoring and study of the impact of these pesticides on water quality, particularly water quality in off-channel habitats, NMFS will be able to refine this incidental take statement, and future incidental take statements, to allow other measures of the extent of take.

Reasonable and Prudent Measures

The measures described below are non-discretionary measures to avoid or minimize take that must be undertaken by the EPA so that they become binding conditions of any grant or permit issued to the applicant(s), as appropriate, for the exemption in section 7(o)(2) to apply. The EPA has a continuing duty to regulate the activity covered by this incidental take statement. If the EPA (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant(s) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the EPA must report the progress of the action and its impact on the species to NMFS OPR as specified in the incidental take statement [50 CFR§402.14(i)(3)].

To satisfy its obligations pursuant to section 7(a)(2) of the ESA, the EPA must monitor (a) the direct, indirect, and cumulative impacts of its long-term registration of pesticide products containing azinphos methyl, bensulide, dimethoate, disulfoton, ethoprop, fenamiphos, methamidophos, methyl parathion, naled, phorate, or phosmet; (b) evaluate the direct, indirect, or cumulative impacts of pesticide misapplications in the aquatic habitats in which they occur; and (c) the consequences of those effects on listed Pacific salmonids under NMFS' jurisdiction. The purpose of the monitoring program is for the

EPA to use the results of the monitoring data and modify the registration process in order to reduce exposure and minimize the effect of exposure where pesticides will occur in salmonid habitat. NMFS believes all measures described as part of the proposed action, together with use of the Reasonable and Prudent Measures and Terms and Conditions described below, are necessary and appropriate to minimize the likelihood of incidental take of listed species due to implementation of the proposed action.

The EPA shall:

1. Minimize the amount and extent of incidental take from use of pesticide products containing azinphos methyl, bensulide, dimethoate, disulfoton, ethoprop, fenamiphos, methamidophos, methidathion, methyl parathion, naled, phorate, or phosmet by reducing the potential of chemicals to reach salmon-bearing waters;
2. Monitor any incidental take or surrogate measure of take that occurs from the action; and
3. Report annually to NMFS OPR on the monitoring results from the previous year.

Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, within one year following the date of issuance of this Opinion, the EPA must comply with the following terms and conditions. These terms and conditions implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1.
 - a. Do not apply pesticide products when wind speeds are greater than or equal to 10 mph.
 - b. Do not apply pesticide products when soil moisture is at field capacity, or when a storm event likely to produce runoff from the treated area is forecasted by to occur within 48 h following application by NOAA/NWS (National Weather Service) or other similar forecasting service.
2.
 - a. EPA shall include the following instructions requiring reporting of fish kills either on the labels for all products containing azinphos methyl, bensulide, dimethoate, disulfoton, ethoprop, fenamiphos, methamidophos, methyl parathion, naled, phorate, and phosmet or in ESPP Bulletins:

NOTICE: Incidents where salmon appear injured or killed as a result of pesticide applications shall be reported to NMFS OPR at 301-713-1401 and EPA at 703-305-7695. The finder should leave the fish alone, make note of any

circumstances likely causing the death or injury, location and number of fish involved, and take photographs, if possible. Adult fish should generally not be disturbed unless circumstances arise where an adult fish is obviously injured or killed by pesticide exposure, or some unnatural cause. The finder may be asked to carry out instructions provided by NMFS OPR to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.

b. EPA shall report to NMFS OPR any incidences regarding azinphos methyl, bensulide, dimethoate, disulfoton, ethoprop, fenamiphos, methamidophos, methyl parathion, naled, phorate, or phosmet effects on aquatic ecosystems added to its incident database that it has classified as probable or highly probable.

3. EPA shall provide OPR a commencement date for annual reporting of monitoring results.

Conservation Recommendations

Section 7(a) (1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The following conservation recommendations would provide information for future consultations involving future authorizations of pesticide a.i.s that may affect listed species:

1. Conduct mixture toxicity analysis in screening-level and endangered species biological evaluations;
2. Develop models to estimate pesticide concentrations in off-channel habitats; and
3. Develop models to estimate pesticide concentrations in aquatic habitats associated with non-agricultural applications, particularly in residential and industrial environments.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the EPA should notify NMFS OPR of any conservation recommendations it implements in the final action.

known to have been applied in the vicinity, may reasonably be supposed to have run off or drifted into the affected area, and if surface water samples, or pathology indicate lethal levels of the a.i.(s).

NMFS notes that with increased monitoring and study of the impact of these pesticides on water quality, particularly water quality in off-channel habitats, NMFS will be able to refine this incidental take statement, and future incidental take statements, to allow other measures of the extent of take.

Reasonable and Prudent Measures ^L

The measures described below are non-discretionary measures to avoid or minimize take that must be undertaken by the EPA so that they become binding conditions of any grant or permit issued to the applicant(s), as appropriate, for the exemption in section 7(o)(2) to apply. The EPA has a continuing duty to regulate the activity covered by this incidental take statement. If the EPA (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant(s) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the EPA must report the progress of the action and its impact on the species to NMFS OPR as specified in the incidental take statement [50 CFR§402.14(i)(3)].

To satisfy its obligations pursuant to section 7(a)(2) of the ESA, the EPA must monitor (a) the direct, indirect, and cumulative impacts of its long-term registration of pesticide products containing 2,4-D, triclopyr BEE, diuron, linuron, captan, or chlorothalonil; and (b) the consequences of those effects on listed Pacific salmonids under NMFS' jurisdiction. The purpose of the monitoring program is for the EPA to use the results of the monitoring data and modify the registration process in order to reduce exposure and minimize the effect of exposure where pesticides will occur in salmonid habitat. NMFS believes all measures described as part of the proposed action, together with use of the Reasonable and Prudent Measures and Terms and Conditions described below, are necessary and appropriate to minimize the likelihood of incidental take of listed species due to implementation of the proposed action.

The EPA shall:

1. Minimize the amount and extent of incidental take from use of pesticide products containing 2,4-D, triclopyr BEE, diuron, linuron, captan, or chlorothalonil by reducing the potential of these chemicals to reach salmon-bearing waters;
2. Minimize the effects of 2,4-D during direct water applications;
3. Monitor any incidental take or surrogate measure of take that occurs from the action; and
4. Report annually to NMFS OPR on the monitoring results from the previous year.

Terms and Conditions ^L

To be exempt from the prohibitions of section 9 of the ESA, within one year following the date of issuance of this Opinion, the EPA must comply with the following terms and conditions. These terms and conditions implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary. Terms and conditions 1, 3, and 6(a) shall be specified on FIFRA labels of all pesticide products containing 2,4-D, triclopyr BEE, diuron, linuron, captan, and chlorothalonil. Alternately, the labels could direct pesticide users to the EPA's ESPP bulletins that specify these terms and conditions.

1. This pesticide shall only be broadcast applied when there is minimal potential for drift to listed salmonid-bearing waters. Do not broadcast spray when wind speeds are below 2 mph or exceed 10 mph, except when winds in excess of 10 mph will carry drift away from salmonid-bearing waters.
2. Products containing 2,4-D (except 2,4-D BEE) may be applied to salmon bearing waters providing the following:
 - a. Applications are only to control non-native (exotic) invasive plant species;
 - b. Applications are only during timing windows provided in Appendix 9 (page 967), and
 - c. Applications will minimally affect non-target native vegetation.

3. Do not apply pesticide products containing 2,4-D, triclopyr BEE, diuron, linuron, captan, or chlorothalonil (include only relevant a.i. or pesticide product name on label/bulletin) when soil is saturated , or when a precipitation event likely to produce direct runoff to salmon bearing waters from the treated area is forecasted by NOAA/NWS (National Weather Service) or other similar forecasting service within 48 h following application.
4. Do not apply diuron to intermittently flooded low lying sites, marshes, swamps, and bogs that may be seasonally connected to habitats that contain listed salmonids.
5. Chlorothalonil applications to conifers will be limited to the following uses: (i) conifer nursery beds; (ii) Christmas tree and bough production plantations; (iii) tree seed orchards; and (iv) landscape situations (ornamental or specimen trees in a residential or commercial landscape).
6. Regarding all products containing 2,4-D, triclopyr BEE, diuron, linuron, captan, and chlorothalonil:
 - a. EPA shall include the following instructions requiring reporting of fish kills either on the labels or ESPP Bulletins :

NOTICE: Incidents where salmon appear injured or killed as a result of pesticide applications shall be reported to NMFS OPR at 301-713-1401 and EPA's Office of Pesticide Programs. The finder should leave the fish alone, make note of any circumstances likely causing the death or injury, location and number of fish involved, and take photographs, if possible. Adult fish should generally not be disturbed unless circumstances arise where an adult fish is obviously injured or killed by pesticide exposure, or some unnatural cause. The finder may be asked to carry out instructions provided by NMFS OPR to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.

- b. EPA shall report to NMFS OPR any incidences regarding 2,4-D, triclopyr BEE, diuron, linuron, captan, or chlorothalonil effects on aquatic ecosystems added to its incident database that EPA has classified as “probable” or “highly probable.”
7. In addition to the labeling requirements above, EPA shall develop and implement a NMFS-approved effectiveness monitoring plan for floodplain habitats, and produce annual reports of the results. NMFS encourages EPA to work with local, state, and other agencies to assist in plan development and implementation. The plan shall identify representative floodplain habitats prone to drift and runoff of pesticides within agricultural and non-agricultural areas. The representative sampling sites shall include habitats currently used by threatened and endangered Pacific salmonids, as identified by NMFS biologists. Sampling sites include at least two sites for each general species (*i.e.*, coho salmon, chum salmon, steelhead, sockeye salmon, and ocean-type Chinook and stream-type Chinook salmon). Sampling shall consist of daily collection of surface water samples for seven consecutive days during three periods of high application for 2,4-D, triclopyr BEE, diuron, linuron, captan and chlorothalonil. The report shall be submitted to NMFS OPR and will summarize annual monitoring data and provide all raw data.

Conservation Recommendations ^L

Section 7(a) (1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The following conservation recommendations would provide information for future consultations involving future authorizations of pesticide a.i.s that may affect listed species:

1. Conduct mixture toxicity analysis in screening-level and endangered species biological evaluations;
2. Develop models to estimate pesticide concentrations in off-channel habitats; and

3. Develop models to estimate pesticide concentrations in aquatic habitats associated with non-agricultural applications, particularly in residential and industrial environments.
4. Develop and implement a program to educate users of pesticide about the potential adverse effects on salmonids and their designated critical habitat. Educational materials should discuss measures and techniques appropriate for reducing input of pesticides to aquatic habitats.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the EPA should notify NMFS OPR of any conservation recommendations it implements in the final action.

Reinitiation Notice^L

This concludes formal consultation on the EPA's proposed registration of pesticide products containing 2,4-D, triclopyr BEE, diuron, linuron, captan, chlorothalonil, and their formulations to ESA-listed Pacific salmonids under the jurisdiction of the NMFS. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the extent of take specified in the *Incidental Take Statement* is exceeded; (2) new information reveals effects of this action that may affect listed species or designated critical habitat in a manner or to an extent not previously considered in this biological opinion; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the identified action. If reinitiation of consultation appears warranted due to one or more of the above circumstances, EPA must contact NMFS OPR. In the event reinitiation conditions (1), (2), or (3) is met, reinitiation will be only for the a.i.(s) which meet that condition, not for all 6 a.i.s considered in the Opinion. If none of these reinitiation triggers are met within the next 15 years, then reinitiation will be required because the Opinion only covers the action for 15 years.

NMFS notes that with increased monitoring and study of the impact of these pesticides on water quality, particularly water quality in off-channel habitats, NMFS may be able to refine this incidental take statement, and future incidental take statements, to allow other measures of the extent of take.

Reasonable and Prudent Measures

The measures described below are non-discretionary measures to avoid or minimize take that must be undertaken by the EPA so they become binding conditions of any grant or permit, in this case the registration and label authorizing use of an a.i., issued to the applicant(s), as appropriate, for the exemption in section 7(o)(2) to apply. The EPA has a continuing duty to regulate the activity covered by this incidental take statement. If the EPA (1) fails to assume and implement the terms and conditions implementing these measures or (2) fails to require the applicant(s) to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the registration label, the protective coverage of section 7(o)(2) lapses. In order to monitor the impact of incidental take, the EPA must report the progress of the action and its impact on the species to NMFS OPR as specified in the incidental take statement [50 CFR§402.14(i)(3)].

To satisfy its obligations pursuant to section 7(a)(2) of the ESA, the EPA must monitor (a) the direct, indirect, and cumulative impacts of its long-term registration of pesticide products containing oryzalin, pendimethalin, and trifluralin; and (b) the consequences of those effects on listed Pacific salmonids under NMFS' jurisdiction. For oryzalin, pendimethalin, and trifluralin, this monitoring consists of documenting adverse effects associated with use of these a.i.s and promptly reporting those adverse effects to NMFS. The purpose of the monitoring program is for the EPA to use the results of the monitoring data and modify the registration process in order to reduce exposure and minimize the effects of exposure when pesticides are used near salmonid habitat. NMFS believes all measures described as part of the proposed action, together with use of the Reasonable and Prudent Measures and Terms and Conditions described below, are necessary and appropriate to minimize the likelihood of incidental take of listed species due to implementation of the proposed action.

The EPA shall:

1. Minimize the amount and extent of incidental take from use of pesticide products containing oryzalin, pendimethalin, and trifluralin by reducing the potential of those chemicals to reach salmon-bearing waters;
2. Monitor any incidental take or surrogate measure of take that occurs from the action; and
3. Report annually to NMFS OPR on the take monitoring results from the previous year.

Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, within one year following the date of issuance of this Opinion, the EPA must comply with the following terms and conditions. These terms and conditions implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary. Terms and conditions 1 - 2 shall be either specified directly on FIFRA labels of all pesticide products containing oryzalin, pendimethalin, or trifluralin or those labels shall direct pesticide users to the EPA's Endangered Species Protection Program (ESPP) county bulletins which list Terms and Conditions 1 - 2

For all products containing oryzalin, pendimethalin, and trifluralin:

1. EPA shall use accepted pesticide risk reduction measures including but not limited to no spray zones, limitations on application methods, rates, and timing or other types of buffers to minimize pesticide loading into salmon-bearing waters.
2. EPA shall include a statement on requiring all incidents of fish mortality occurring within the vicinity of the treatment area in the four days following application of any pesticide products containing oryzalin, pendimethalin or trifluralin, be reported to EPA's Office of Pesticide Programs. "Vicinity" includes areas adjacent to, downwind of, or downstream of the application area which might reasonably be affected by the application. Given environmental transport properties of these a.i.s, NMFS considers areas >1 mile from the application sites are outside of application vicinity.

3. EPA shall report to NMFS OPR any incidences regarding oryzalin, pendimethalin, or trifluralin effects on aquatic ecosystems added to its incident database which EPA has classified as “probable” or “highly probable.” within one month of receiving the incident report.

Conservation Recommendations

Section 7(a) (1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The following conservation recommendations would provide information for future consultations involving future authorizations of pesticide a.i.s that may affect listed species:

1. Collaborate with States to develop accurate and consistent methods for pesticide incident detection, reporting, and verification.
2. Conduct mixture toxicity analysis in screening-level and endangered species biological evaluations;
3. Develop models to estimate pesticide concentrations in shallow, low-flow habitats;
4. Develop models to estimate pesticide concentrations in aquatic habitats associated with non-agricultural applications, particularly in residential and industrial environments; and
5. Develop and implement a program to educate users of pesticide about the potential adverse effects on salmonids and their designated critical habitat. Educational materials should discuss measures and techniques appropriate for reducing input of pesticides to aquatic habitats.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the EPA should notify NMFS OPR of any conservation recommendations implemented in the final action.

Reinitiation Notice

This concludes formal consultation on the EPA’s proposed registration of pesticide products containing oryzalin, pendimethalin, and trifluralin and their formulations to ESA-listed Pacific